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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,150	12/10/2003	Chih Yuan Huang	681939-55US	4810

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EXAMINER	
MARKOFF, ALEXANDER	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
02/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,150	HUANG ET AL.	
	Examiner	Art Unit	
	Alexander Markoff	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *9-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 12-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-8 and 12-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the specific first and second cleaning solutions, does not reasonably provide enablement for non-specified solutions. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. The instant claims recite non-specified first and second cleaning solutions, while the specification is limited only to the specific solutions. The specification fails to provide guidance regarding any other possible solutions. In view of low predictability in the chemical art and in view of the referenced guidance an ordinary artisan would not be able to determine any other solution without undue experimentation and thereby would not be able to practice the claimed invention without undue experimentation.

3. Claims 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for some of the recited concentrations of the ammonium hydroxide, does not reasonably provide enablement for the entire claimed range of the ammonium hydroxide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. The claims recite the

concentrations of ammonium hydroxide, which include the concentrations of the ammonium hydroxide, which could not be obtained in aqueous solutions.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-8 and 12-14 provide for the use of ozonated water, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1-8 and 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over the state of the prior art admitted by the applicants in the specification in view of Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763).

The admitted prior art (Background of the Invention, pages 1 and 2) teaches that the claimed method except for the step of cleaning the wafer with ozonated water prior to the RCA cleaning steps.

However, the use of ozonated water to remove organic contamination prior to the RCA cleaning was known in the art as evidenced by Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763). See at least Background of the Invention in US Patent NO 6,491,763 and part [0059] in US 2003/0045098.

It would have been obvious to an ordinary artisan at the time the invention was made to include an ozonated water cleaning step prior to the conventional RCA cleaning disclosed by the admitted prior art with reasonable expectation of success in order to enhance the process because Verhaverbeke et al (US

2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) teaches such as known to remove organic contamination.

With respect to claims 12 and 13 Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) do not disclose specifically claimed concentrations of ozone, but it would have been obvious to an ordinary artisan to find an optimum concentration of the active component by routine experimentation in order to enhance the process.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the state of the prior art admitted by the applicants in the specification in view of Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) as it applied to claim 1 above, further in view of Chang (US 2002/0020432).

The admitted prior art modified by the teachings Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) does not teach the second solution comprising an ozonated water. However, Chang teaches that such step was conventional in the cleaning of the gate oxide structures with RCA chemicals. See at least parts [0005-0006].

Itr would have been obvious to an ordinary artisan at the time the invention was made to include the ozonated water step in the modified method of the admitted prior art after cleaning with RCA with reasonable expectation of success because Chang recommends such.

Response to Arguments

11. Applicant's arguments with respect to claims 1-8 and 12-14 have been considered but are moot in view of the new ground(s) of rejection.

The examiner agrees with the applicants that US 2006/0051920, which was applied by the previous examiner, is not a prior art with respect to the instant application.

The new rejection is provided.

Conclusion

12. Please note that the case was transferred to examiner Markoff.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander Markoff
Primary Examiner
Art Unit 1792

AM

/Alexander Markoff/
Primary Examiner, Art Unit 1792